



# Newton's Nightmare in Visual Effects

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**DIGITAL  
DOMAIN**

**SIGGRAPH**  
2001 EXPLORE INTERACTION  
AND DIGITAL IMAGES

# Where I'm Coming From...

**Entertainment - Films, Video, Games**

**Goal:**

**Maintain Willing Suspension of  
Disbelief**

**To that end:**

- Software Department 10 people
- Tech Directors 15 people
- Artists: 100+ people

# Reality vs. Faux Physics

## Round 1

Oh Brother,  
Where Art Thou?



# Reality vs. Faux Physics

## Round 2

### Gran Turismo 3

**Q: So how does one go about making a killer driving game?**

**“Set high goals. Make no compromises. Be lucky. Seriously, though, don't think how a car would behave. Think about how a car is built. Go back to the basics. Concentrate on re-creating a real-life car. “**

**(LA Times July 26, 2001 ALEX PHAM)**



# Reality vs. Faux Physics

## Round 3

### Titanic



# How Much Reality?

**Audience sophistication increases at the same rate as technological sophistication.**

## **Audience expertise**

- Recognizing everyday things.

## **Audience gullibility**

- Extraordinary things.

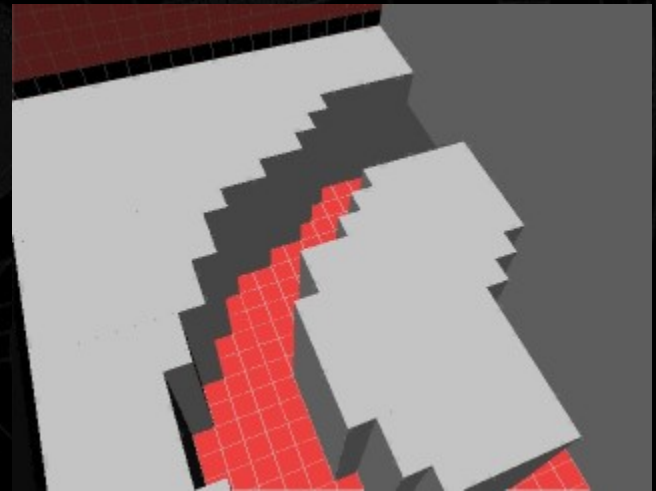


# Real World Limitations

**Simulations/Renders  
: less than a day,  
2GB.**

**Control: Must have  
it.**

**Simulations/Renders  
start from reality  
and head towards  
arbitrary control.**



# Example: Environmental Lighting

**Initially: Faked it all.**

**Next: Tried  
Measuring it.**

**Now: Record it.**





# The Future - In Entertainment

**Computer Graphics is just a tool.  
Give film makers the ultimate  
control... be able to reproduce  
reality.**

**Must be able to simulate reality.  
Faking it works for now, the future is  
reality... with control.**